Installation Manual

Pégasus Nx

World's Most Advanced Alarm Panel Communicator

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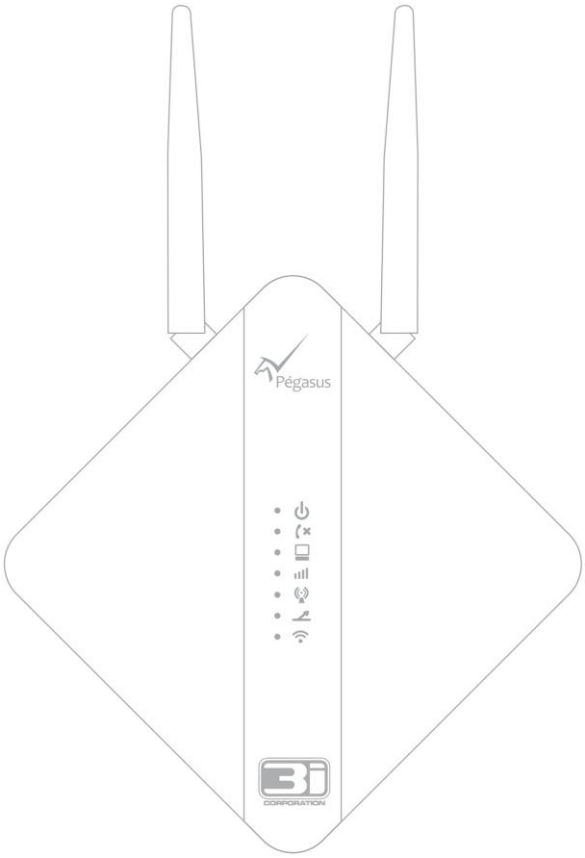

Pégasus Nx

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Table of Contents

Introduction 1

About the Installation Manual 1

What is Pégasus Nx? 1

Contact Information or Comments 2

Technical Specifications 3

Pégasus Nx Features 10

Getting Started 16

How to Assemble Pégasus Nx? 19

Instructions 19

How to Wire Pégasus Nx? 39

Wiring Instructions 39

Wiring Example 39

Single-Mode: Normally Close (N.C.) Contacts without End of Line (EOL) Resistor 42

Contacts without End of Line (EOL) Resistor 42

Single-Mode: Normally Close (N.C.) Contacts with End of Line (EOL) Resistor 43

Single-Mode: Normally Open (N.O.) Contacts with End of Line (EOL) Resistor 44

Single-Mode: Normally Close (N.C.) Contacts without End of Line EOL Resistor, with Tamper Recognition. 45

Single-Mode: Normally Close (N.C.) Contact with End of Line (EOL) Resistor, with Tamper & Wire Fault Recognition 46

Double-Mode: Normally Close (N.C.) Contacts without End of Line (EOL) Resistor 47

Double-Mode: Normally Close (N.C.) Contacts without End of Line (EOL) Resistor, with Tamper Recognition 48

Double-Mode: Normally Close (N.C.) Contacts with End Of Line (EOL) Resistor, with Tamper & Wire Fault Recognition 49

Double-Mode: Parallel Connection 50

How does LEDs Work? 51

LEDs Description 52

1 Introduction

About the Installation Manual

This Installation Manual is aimed in providing technical information as a reference to the Pégasus™ Nx **Ethernet+GPRS** and **Ethernet+GPRS+WiFi** models.

The installation manual can be used by 3i Corporation® authorized distributers and engineers to properly install the device.

The installation manual also describes the technical specification related to the device. The end of this installation manual contains information related to various conditions and functionalities of LEDs.

What is Pégasus Nx?

Pégasus™ Nx Alarm Panel Communicator is an extremely compact, robust device in terms of communication interface for Alarm Panels. It brings the most innovative and reliable technologies for data communication to the Fire and Intrusion Alarm Panels prepared to operate only with conventional telephone lines.

When energized, Pégasus™ Nx enters the Ethernet TCP/IP (Intranet/Internet) or GSM operator network via GPRS (Data Channel) or Wi-Fi Network (only in Ethernet+GPRS+WiFi model), and though it establishes connection with the Zeus™ Server. It creates an online communication channel between the monitored client and the Alarm Monitoring Station, allowing immediate transmission of all events generated by the alarm panel in the Contact ID Protocol.

All information transmitted by the device is encrypted (AES Rijndael128/256 Bit) ensuring maximum confidentiality

The Zeus™ Server, on the other hand, is a multitask software that works as a virtual receiver, capturing the events transmitted by the device and transmitting them to the monitoring software like a conventional receiver simulating the communication protocol of Ademco-685, Sur-Gard MLR2-DG, Sur-Gard via TCP/IP, and Radionics D6600 receivers.

Contact Information or Comments

For general contact, technical support, questions or comments to report documentation errors and suggestions, email us at **contato.br@3i-corporation.com** or **contact.in@3i-corporation.com**.

Our aim is to make this Installation Manual as helpful as possible. Keep us informed of your comments and suggestions for improvements.

3i-Corporation® appreciates feedback from the users of our information.

2 Technical Specifications

Power Supply

1	Input Voltage Range	9VDC – 16VDC	2	Maximum Input Current	Ethernet+GPRS: 350mA Etherent+GPRS+ WiFi: 450mA

Battery

1	Battery Type	Lithium-Polymer with inbuilt NTC thermistor	4	Battery Cable Length	65mm (Approx.)
2	Capacity	2000mAh	5	Battery Backup	Up to 6 hours depending on network status
3	Nominal Voltage	3.7V			

Processor

1	CPU	ARM 32bit Cortex-M3	2	Clock	32Mhz

Ethernet

1	Network Standard	IEEE 802.3u compliant fast Ethernet	4	Ethernet Cable	CAT5 crossover cable
2	Data Rate	Full Duplex, 10/100Base TX Ethernet PHY	5	Protocols	TCP/UDP
3	Auto Negotiation	Enable or Disable	6	Speed Selection	10/100Mbps

GSM/GPRS

1	Modem	Quad-band - 850, 900, 1800, and 1900 MHz	6	SIM Card Holder	Dual SIM support
2	Protocol Support	TCP/UDP	7	Antenna: Impedance	50Ω
3	Antenna Type	External Male SMA DAM (Dipole Antenna Module)	8	Antenna: Peak Gain	2.0dBi

4	Antenna: Frequency Range	824-960MHz, 1710-2170MHz	9	Antenna: Return Loss	-4.4dB
5	Remote Firmware Update	Available via FOTA (Firmware Over-The-Air)			

Wi-Fi (Only in Ethernet+GPRS+WiFi Model)

1	Network Standard	EEE 802.11 b/g	6	Security Types	WPA, WPA2, None
2	Typical WLAN Sensitivity	88dBm at 8% PER (Packet Error Rate), 11Mbps -74dBm at 10% PER, 54Mbps	7	Typical WLAN Transmit Power	+19.5dBm at 11Mbps, CCK (11b) +15.0dBm at 54Mbps, OFDM (11g)
3	WLAN Antenna: Type	External female SMA Dipole Antenna Module (DAM)	8	WLAN Antenna: Frequency Range	2.4 - 2.5GHz
4	WLAN Antenna: Impedance	50Ω	9	WLAN Antenna: Return Loss	10dB
5	WLAN Antenna: VSWR	2.0 Max	10	WLAN Antenna: Peak Gain	2.0dBi

Zones

1	Number of Wired Zones	Two (extendible to four zone inputs)	3	Supporting Modes	Single-mode and double-mode zone interfacing
2	EOLR (End of Line Resistor)	1K, and 2.2K			

PGMs

1	PGMs-OC	Supports 200mA, 16V sink current per PGM	2	PGM- Relay	Supports 125VAC/60VDC @2A

Telephone Line Connection

1	Maximum Telephone Line Voltage Detection	100VAC, 48VDC	2	Minimum Telephone Line Voltage Detection	3VDC

Virtual Telephone Line Output

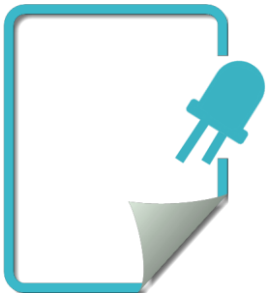
1	Constant Current Source for Alarm Panel	25mA, 20V			

Serial Port

1	Serial Debug (UART) Interface	10 PIN male, right-angled box header	3	Use	For configuration, firmware upgrade and to view debug messages
2	Baud Rate	115200 baud			

USB

1	USB 2.0 Device Interface	Mini -B USB	3	USB Full Speed	12Mbps
2	Cable Type	USB cable with ferrite core (recommended)	4	Use	For configuration, firmware upgrade and to view debug messages



LEDs (Top to Bottom)

1	LED #1	Power ON Status	5	LED #5	GSM Status
2	LED #2	Telephone Line Cut Off	6	LED #6	Alarm Panel Return Connection
3	LED #3	Online	7	LED #7	Wi-Fi Status (only in Ethernet+GPRS+WiFi model)
4	LED #4	GSM Signal Strength			

Operational Specifications

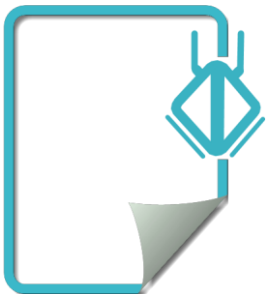
1	Operating Temperature	-20℃ - 60℃	3	Storage Temperature	-20℃ - 60℃
2	Relative Humidity	10-90%, no condensation			

Tamper Switch

1	Tamper Type	Internal	2	Use	Reports enclosure violation

Board Dimensions

1	Length	82mm	3	Thickness	1.6mm
2	Width	80mm	4	Number of Layers of PCB	Four



Enclosure Dimensions

1	Length	112mm	3	Height	4.2mm
2	Width	112mm			

Note:

POWER SUPPLY, ETHERNET (RJ45)/USB/SERIAL CABLES, EOL RESISTORS AND SIM CARDS ARE NOT PROVIDED IN THE PACKAGE.

You need to purchase the above mentioned accessories (except SIM CARDS) from our authorized distributer or from any electronic shop as per the technical specifications provided in this section.

You can get SIM CARDS from the Network Service Provider of your choice. Directly contact the Network Service Provider for subscription details.

3 Pégasus Nx Features

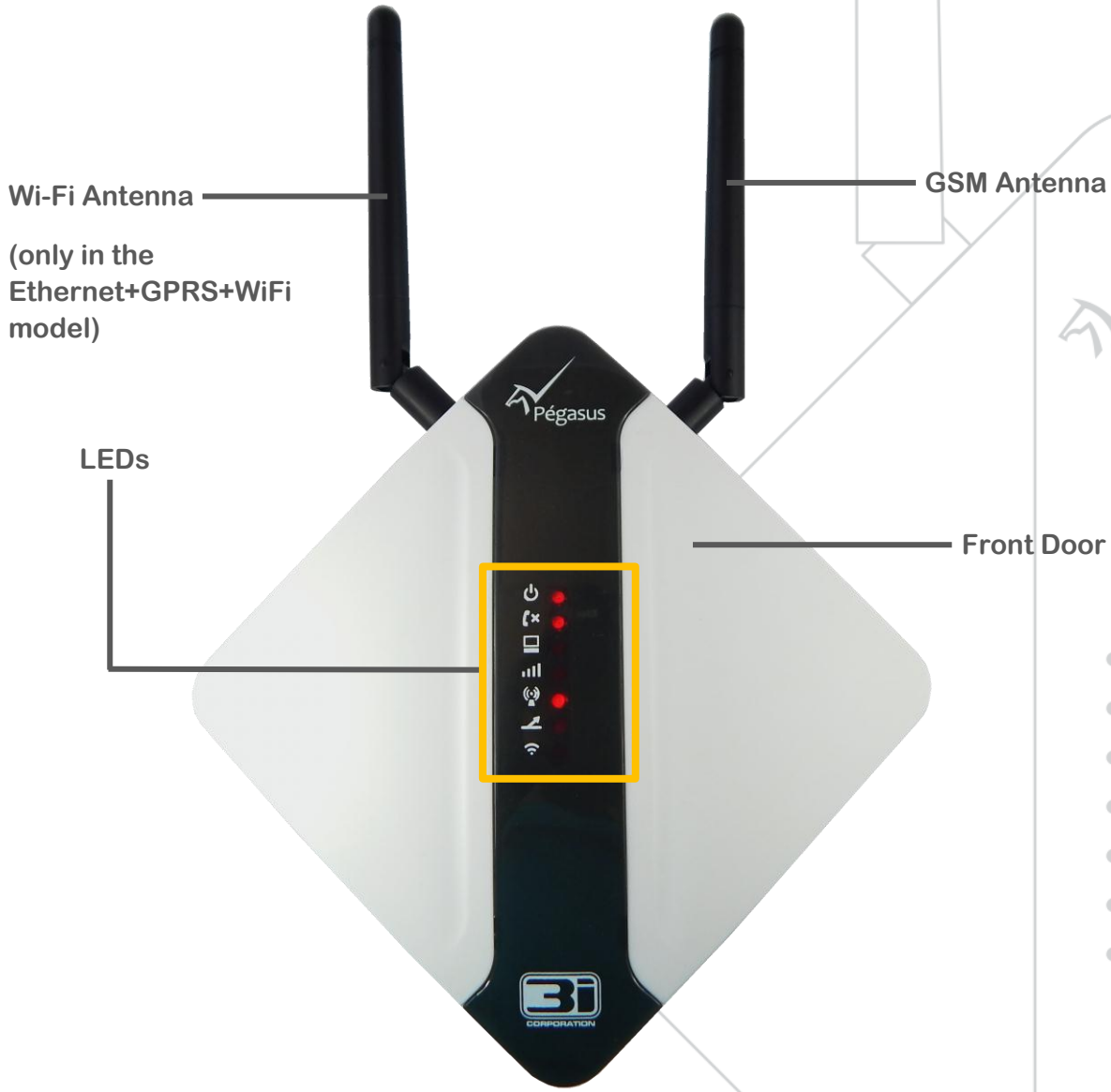
- Built-in world-class GSM modules from Telit®;
- Powered by ARM® Cortex 32 Bits Processor;
- Communicates with monitoring station via GSM/GPRS (2xSIM Cards), Ethernet (TCP/UDP, fixed or dynamic IP), Wi-Fi* (2x Access Points), Telephone Line, SMS, CSD and Voice Call;

  NOTE: *WiFi interface is only available in the Ethernet+GPRS+WiFi model.
- Built-in GSM Jammer Detector, essential for security systems based on GSM;
- Transmits by SMS or CSD in case of data network failure and monitored client phone line cut;
- Exclusive FREE CALLS technology, which allows the sending of Alive packets through voice channel;
- Compatible with any alarm panel, which communicates in the Contact ID Protocol;

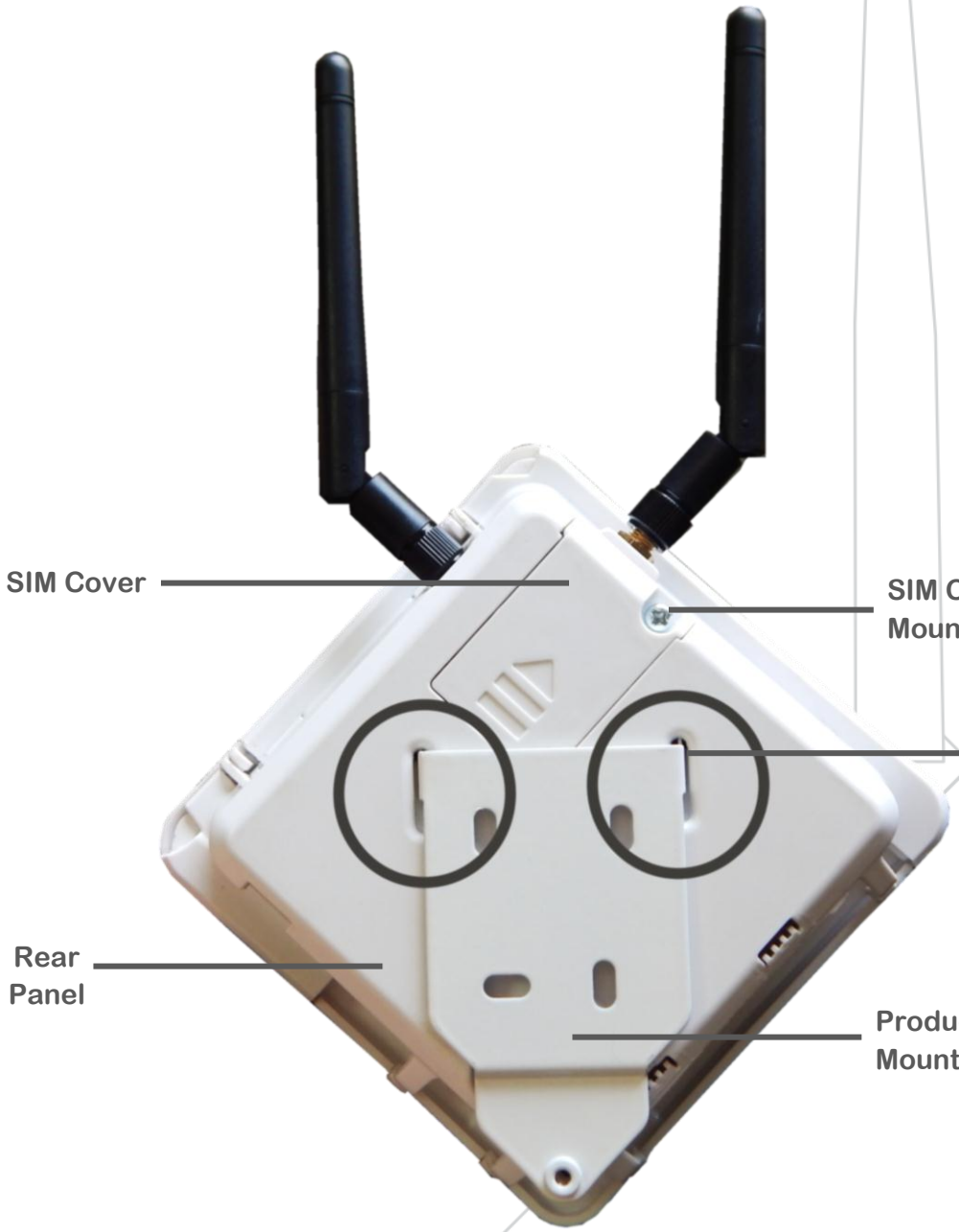
- Allows simultaneous transmission to two different monitoring station using different interfaces;
- Supports 8 fixed or dynamic IPs;
- Allows the verification of the monitored customer's telephone line;
- Has phone line cut detector with configurable delay;
- Allows phone line switching for alarm panels download;
- Allows remote configuration and firmware update;
- Has 4 PGMs (3 Open Collector and 1 Relay) that can be controlled remotely;
- Has 2 zones, which are extended to 4 zone inputs;
- Loop test - Allows tests of alarm panel operation;
- Supervises the physical connection with the alarm panel;
- Allows local or remote monitoring and analysis of its behavior and routines;
- Allows local or remote GSM Signal measurement;
- Encrypted data transmission (128/256 bits);

- 2000mAh internal lithium-polymer battery;
- Built-in tamper switch;
- Device status via ECO SMS;
- Modem firmware update over-the–air (FOTA);
- 512KB of memory for Logs, stores up to 5000 events.

4 Pégasus Nx Nomenclature



Front Panel
Terminal Header
M3.5xL35
Product Mounting Screw


SIM Cover
SIM Cover Mounting Screw
Product Mounting Plate Placeholders
Rear Panel
Product Mounting Plate

5 Getting Started

The new Pégasus™ Nx comes with a modern and stylish enclosure, which is compact, made up of premium, highly durable material. The exclusive, modern and informative box packaging designed for our new Pégasus™ Nx brings to the product a quality level never seen in the electronic security market.

Depending on the module, the box packaging contains the following antenna types:

Module / Antenna Type	GSM Antenna	Wi-Fi Antenna
GSM/GPRS+Ethernet	✓	✗
GSM/GPRS+Ethernet +Wi-Fi	✓	✓

Pégasus
Intelligence + Information = Innovation

Pégasus™ Nx Packaging Box
Wi-Fi Antenna
Pégasus™ Nx Module
Blister
GSM Antenna

6 How to Assemble Pégasus Nx?

Instructions

Warning:

Installation of the device should be done by the trained 3i-Corporation® authorized service personnel only.

Always use genuine 3i-Corporation® approved accessories with the device.

Pégasus™ Nx is extremely easy to assemble because of its state-of-art design. Just follow the step-by-step procedure to quickly assemble the device.

To assemble Pégasus™ Nx

1. Open the **Front Door** of the device. DO NOT apply extreme force.

2. Using an appropriate screwdriver, loosen the **M3 x L32 Product Mounting Screw** in the anti-clockwise direction until it is fully released.

   Remove the screw by pulling it out of the **Front Panel**, see the below images.

RING
TIP

3. On the **Rear Panel** (backside) of the device, locate the **SIM Cover** secured by a **M3 x L6 Machine** screw, see the below image.

4. Using an appropriate screwdriver, loosen the screw in the anti-clockwise direction until it is fully released.

5. Open the **SIM Cover** by sliding it horizontally in the outward direction, and then lifting it up as displayed in the below image.

6. Pégasus™ Nx is built-in a dual SIM card holder, the SIM slot towards the PCB is designed to hold SIM card #2, whereas the SIM slot projecting towards the SIM cover holds SIM card #1.

7. Insert **SIM card #2** in the **SIM slot #2**. Make sure you insert the SIM card exactly as shown in the below image.

8. Insert **SIM card #1** in the **SIM slot #1**. Make sure you insert the SIM card exactly as shown in the below image.

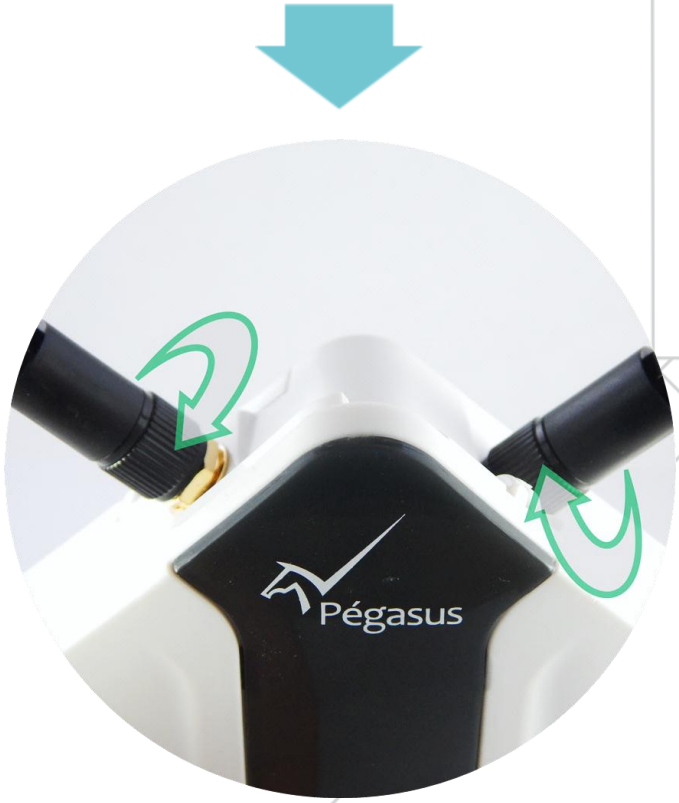
9. Once the SIM cards are installed properly, close the SIM cover and secure it using the **M3xL6 Machine Screw**. Tighten the screw in the clockwise direction.

10. Tighten the **GSM Antenna** (External male SMA, Dipole Antenna Module) on the **GSM Antenna Connector** (right side of device) in the clockwise direction.

    Tighten the **Wi-Fi Antenna** (External female SMA, Dipole Antenna Module) on the **Wi-Fi Antenna Connector** (left side of device) in the clockwise direction, see the below images.

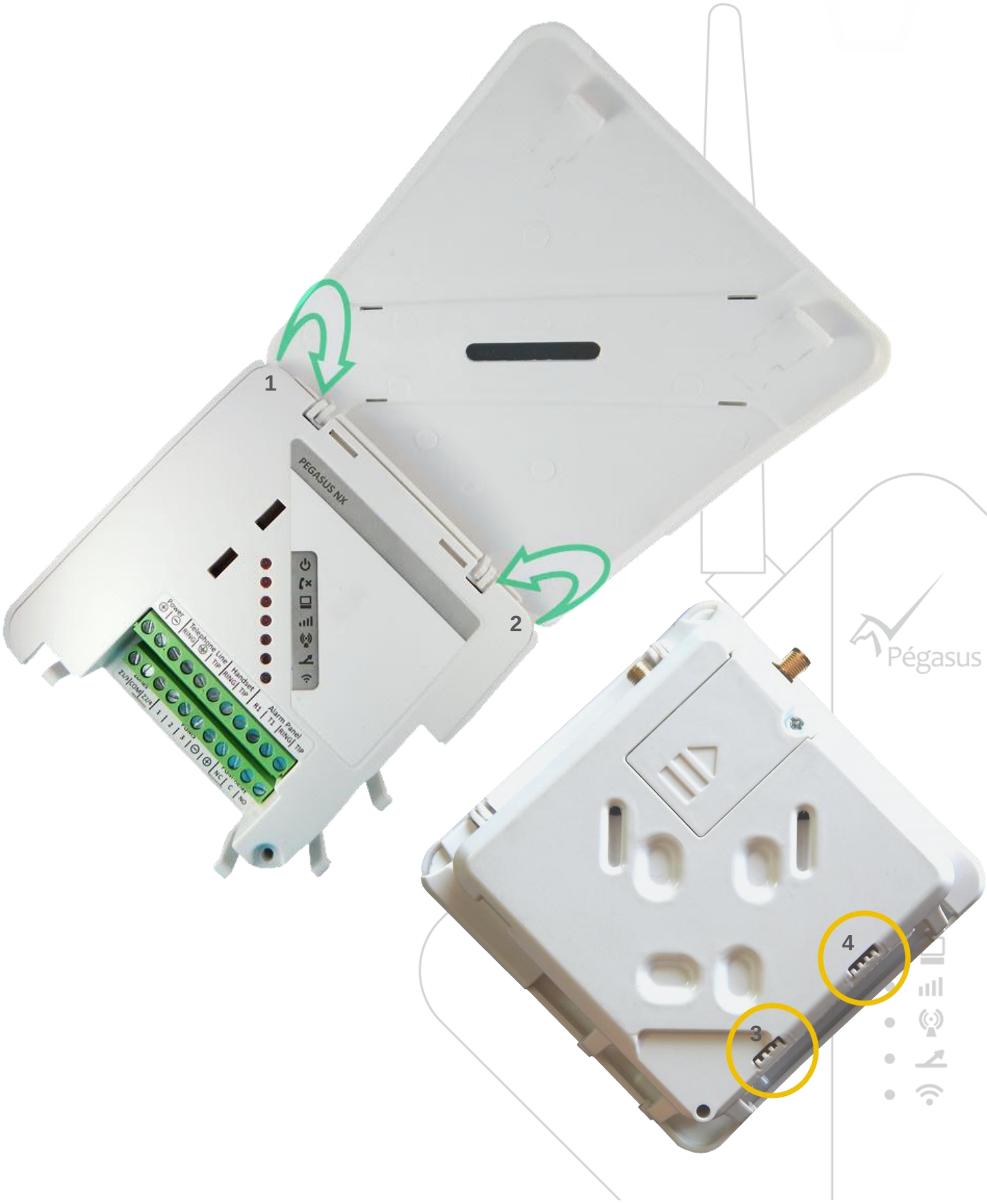
Note:

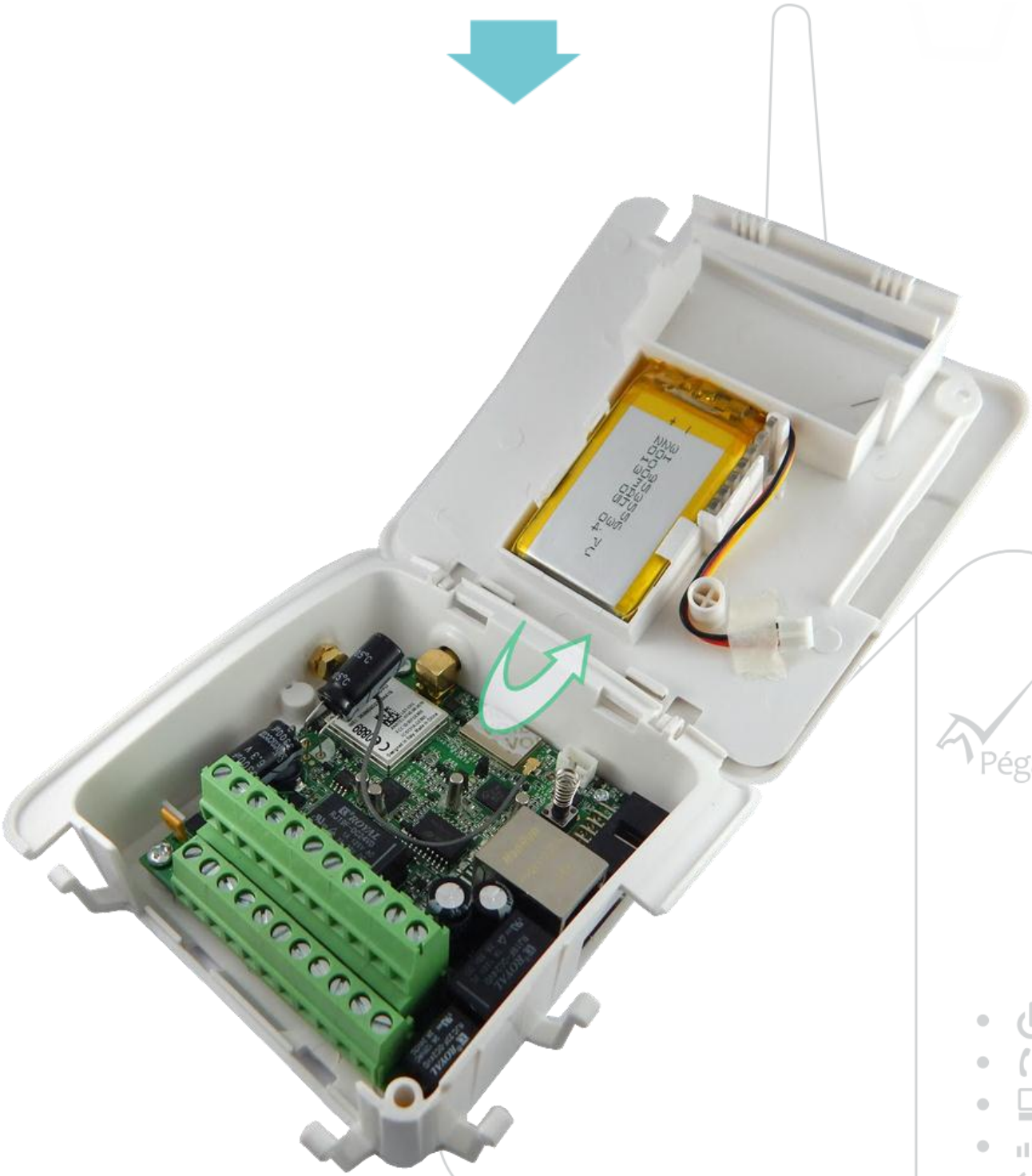
If your module does not have Wi-Fi, skip the Wi-Fi antenna installation step and proceed only with the supplied GSM antenna installation.



When fixed properly, both the antennas should look firm and stable on the module as shown in the below image.

11. Remove the **Front Panel** of the device by pulling it in the outward direction from position **1** & **2**, and pushing it from the backside from position **3** & **4**, see the below images.


1
2
PEGASUS NX
3
4
Pégasus

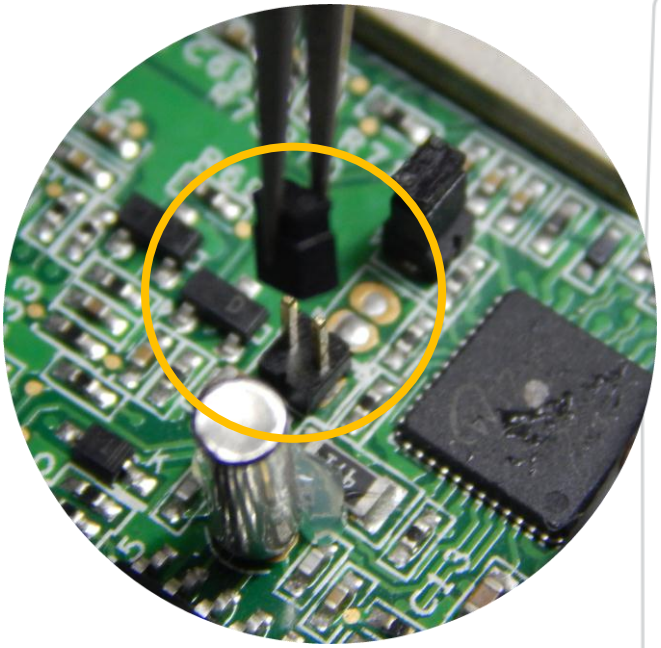


12. Auto-negotiation:

To enable auto-negotiation, remove **Jumper Shunt** from **Jumper Pins** at **J4** position.

13. To disable auto-negotiation, do not remove the **Jumper Shunt** from the **Jumper Pins** at **J4** position.

14. To get Ethernet speed of 100Mbps, remove **Jumper Shunt** from **Jumper Pins** at **J3** position.



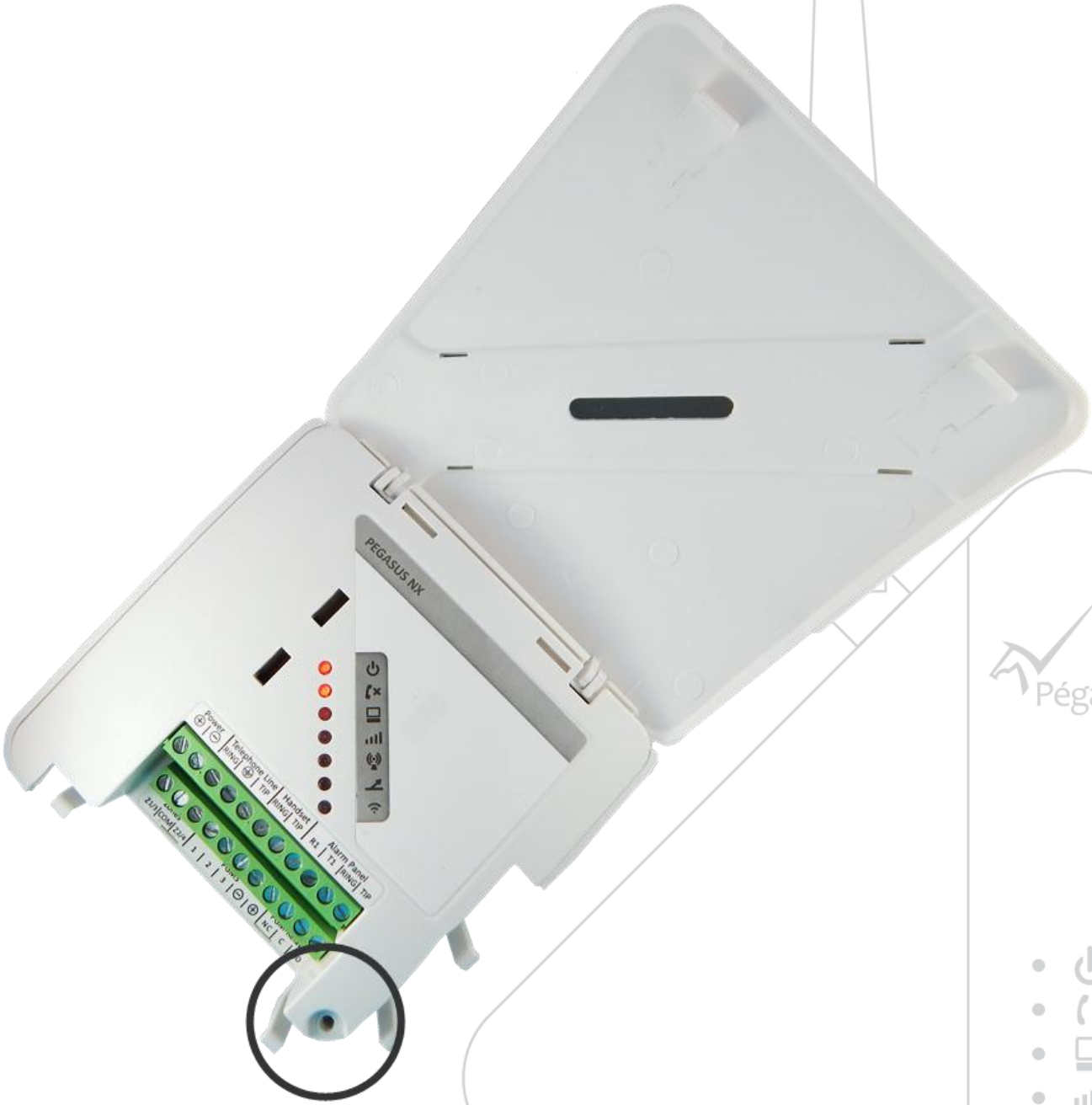
15. To limit Ethernet speed to 10Mbps, do not remove **Jumper Shunt** from **Jumper Pins** at **J3** position.

16. Remove the **Tape** holding the **Battery Connector**.

    Connect the **Battery Connector** to the onboard connector, see the below images.

When the battery connector is properly connected to the battery connector, LEDs starts blinking.

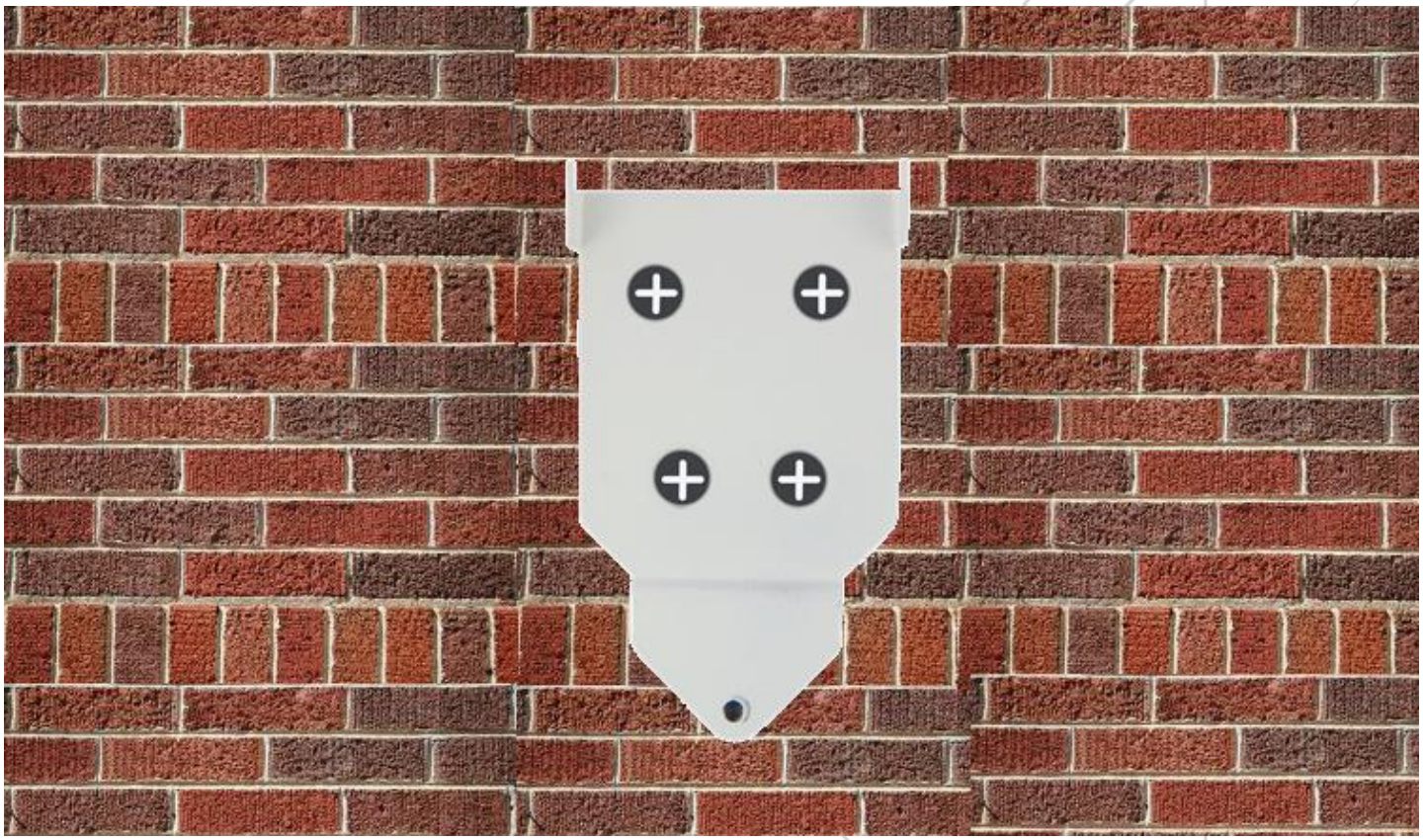
17. After the Battery Connector installation, fix the **Front Panel** back on the Rear Panel and secure, DO NOT secure it using the **M3.5xL35 Product Mounting Screw**, see the below image.

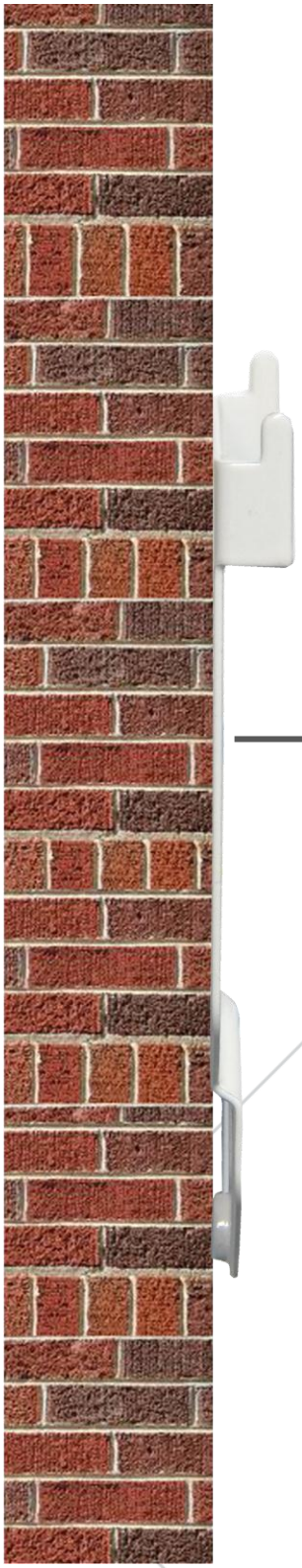


18. Close the **Front Door** of the device.

19. Connect the **Ethernet Cable** (CAT5 crossover cable) to the **RJ45 port** of the device, see the below image.

20. Install the **Product Mounting Plate** on the wall where you want to fix the device.





21. Fix the device on the **Product Mounting Plate** and tighten the **Product Mounting Screw**. Install it properly as shown in the below image. A properly installed device looks upright and stable.

Wall - Side View

Pégasus™ Nx – Side View

Product Mounting Bracket – Side View

Product Mounting Screw

Pégasus™ Nx fully installed on the wall using the **Product Wall Mounting Bracket**.

7 How to Wire Pégasus Nx?

Wiring Instructions

Warning:

Wiring should be done by the trained 3i-Corporation® authorized service personnel only.

Never install the device during lightning or storm.

Always use genuine 3i-Corporation® approved accessories with the device.

TURN OFF power supply during wiring.

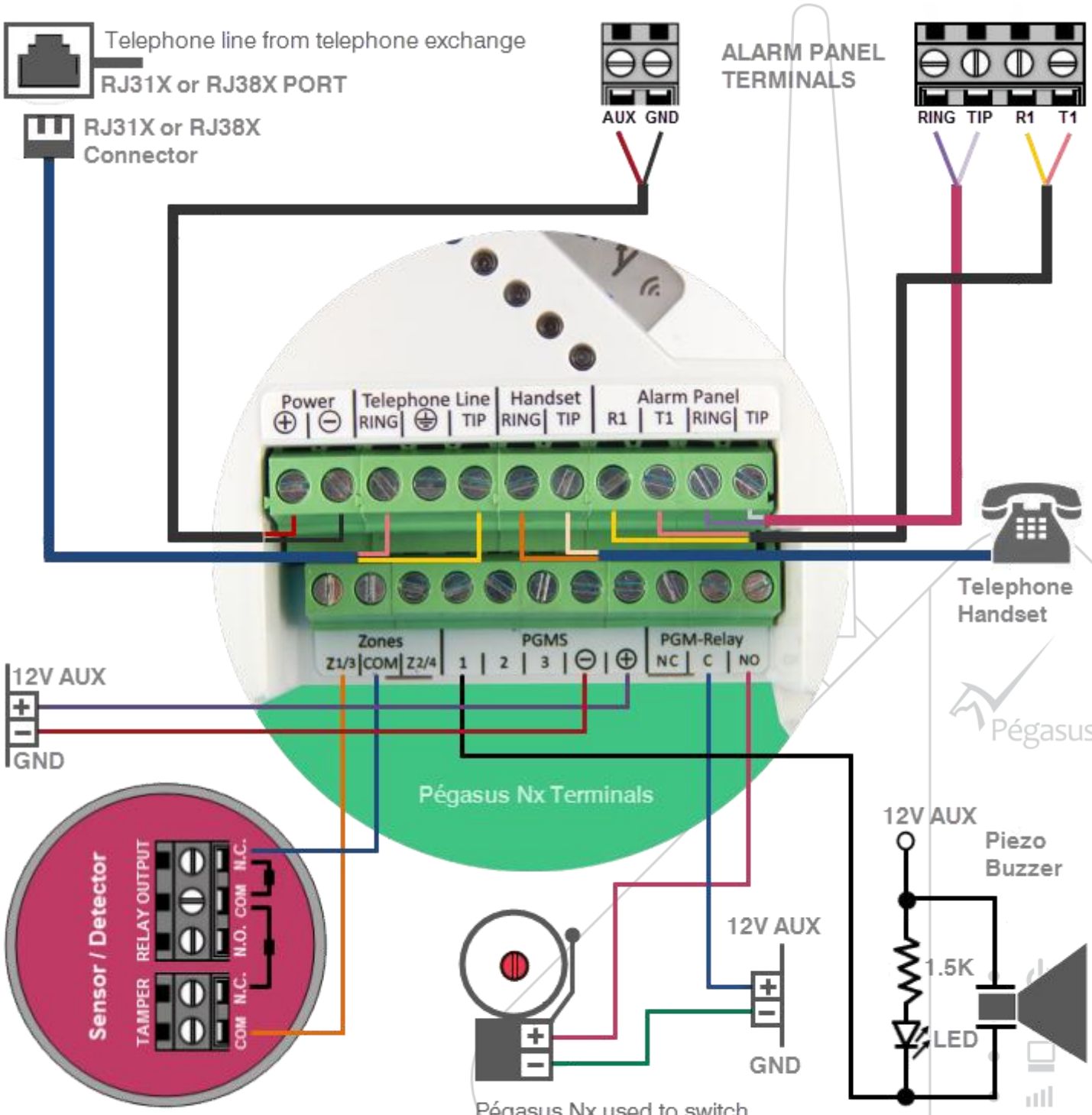
Wiring Example

Pégasus™ Nx is built in four terminals: **R1**, **T1**, **RING** and **TIP** for alarm panel connections. These are fully compatible with any alarm panel that follows Contact ID Protocol.

Telephone Line and **Handset** terminals that can be used to connect wires from telephone exchange and telephone handset respectively.

The **programmable SPDT relay output** can be used for various crucial operations. For example, switching a high current powered bell or siren.

Three programmable open collector outupts can be used to activate a buzzer or strobe light, open or close doors etc. When any of the three on board programmable open collector outputs is activated, Pégasus™ Nx triggers any device connected to it.



Wiring Example: A sensor/detector with relay base connected to zone input 1/3 of the Pégasus Nx terminal block in single-mode, normally close (N.C.) contacts with End of Line (EOL) resistor with Tamper & wire fault recognition.

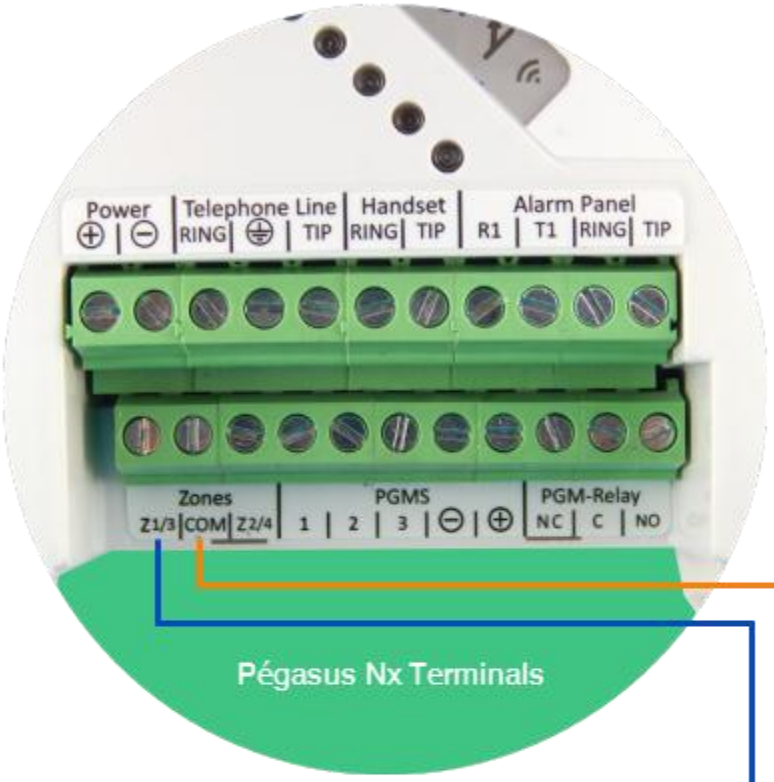
Pégasus Nx used to switch a high current powered bell or siren.

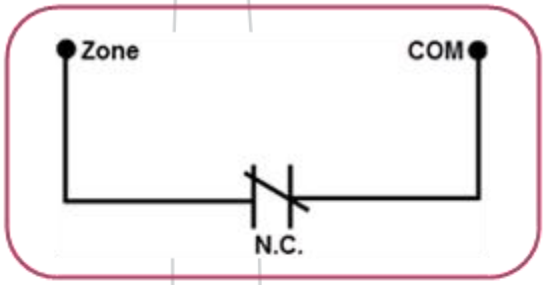
A buzzer connected to the programmable Open Collector (O.C.) output 1 of Pégasus Nx.

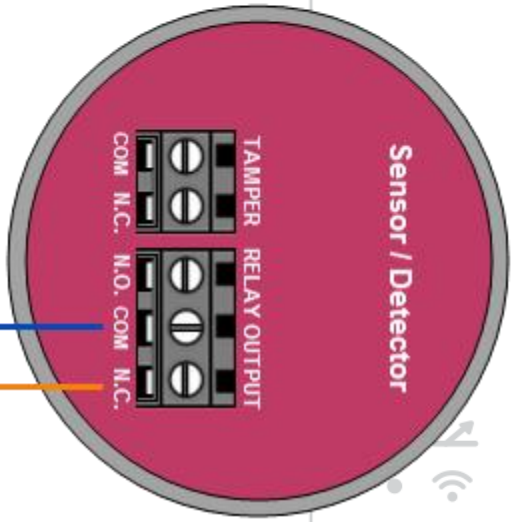
Pégasus™ Nx is built-in two zones, which are extended to four zone inputs. The device supports zone input wiring in both single-mode and double-mode. A sensor or detector can be connected in nine different ways.

- Single-Mode: Normally Close (N.C.) Contacts without End of Line (EOL) Resistor
- Single-Mode: Normally Close (N.C.) Contacts with End of Line (EOL) Resistor
- Single-Mode: Normally Open (N.O.) Contacts with End of Line (EOL) Resistor
- Single-Mode: Normally Close (N.C.) Contacts without End of Line (EOL) Resistor, with Tamper Recognition
- Single-Mode: Normally Close (N.C.) Contact with End of Line (EOL) Resistor, with Tamper & Wire Fault Recognition
- Double-Mode: Normally Close (N.C.) Contacts without End of Line (EOL) Resistor
- Double-Mode: Normally Close (N.C.) Contacts without End of Line (EOL) Resistor, with Tamper Recognition
- Double-Mode: Normally Close (N.C.) Contacts with End Of Line (EOL) Resistor, with Tamper & Wire Fault Recognition
- Double-Mode: Parallel Connection

Single-Mode: Normally Close (N.C.) Contacts without End of Line (EOL) Resistor

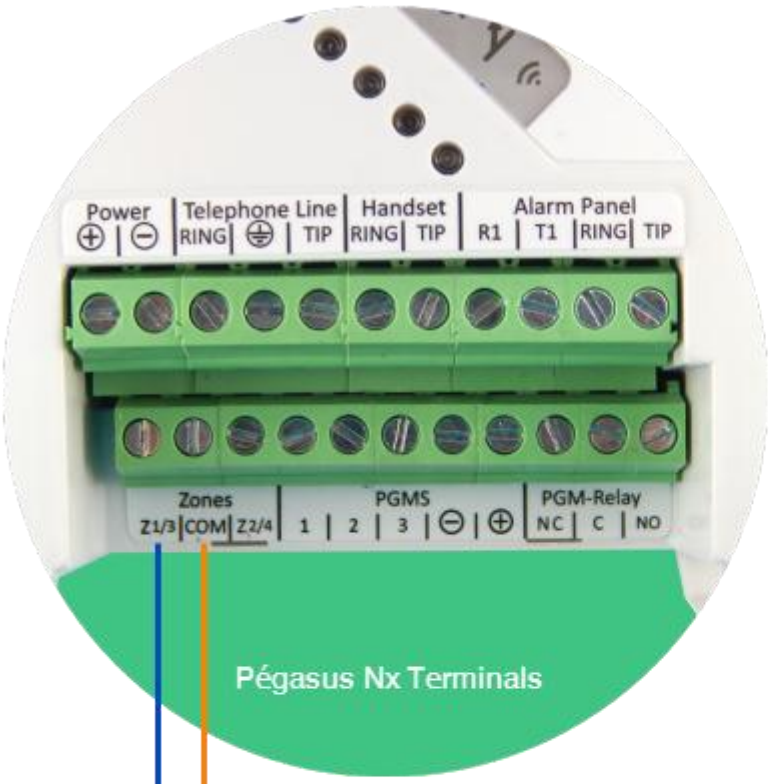


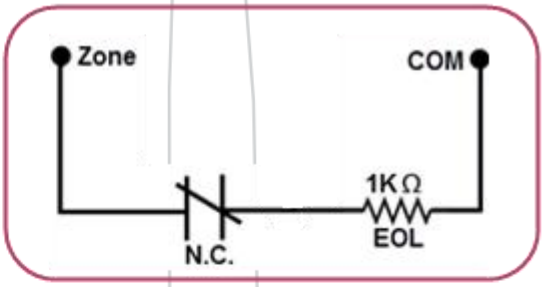


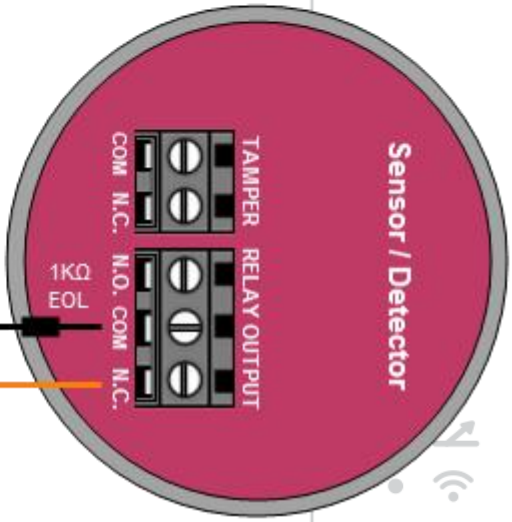


Wiring Example: A sensor/detector with relay base connected to zone input 1/3 of the Pégasus Nx terminal block in single-mode, normally close (N.C.) contacts without End of Line (EOL) resistor.

Single-Mode: Normally Close (N.C.) Contacts with End of Line (EOL) Resistor

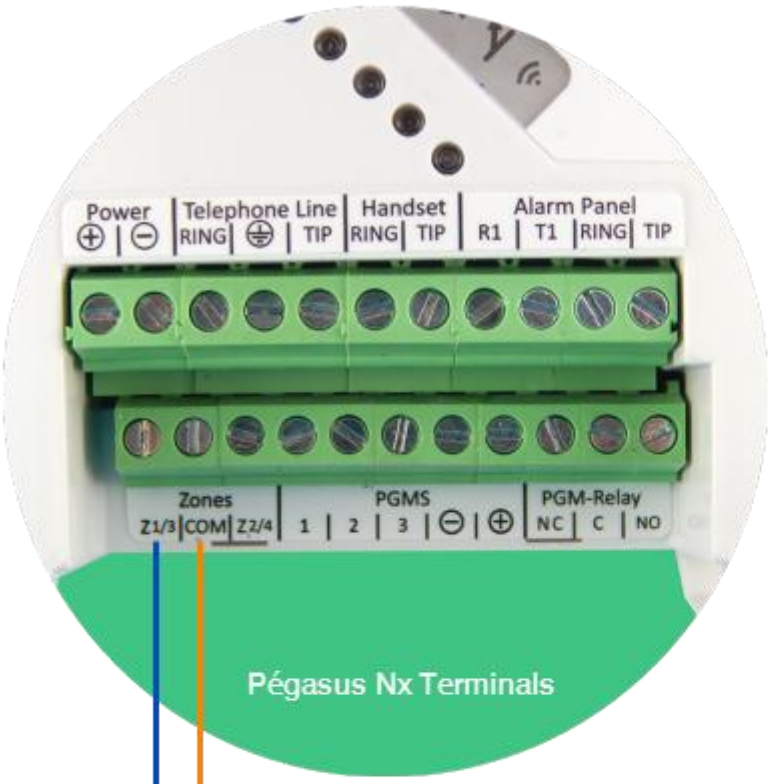


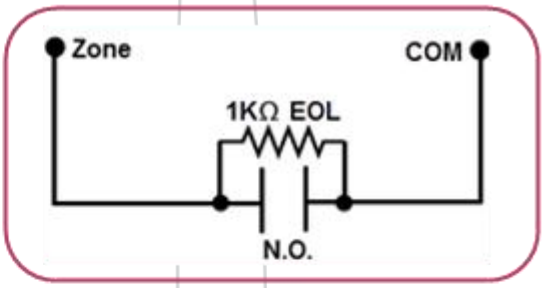


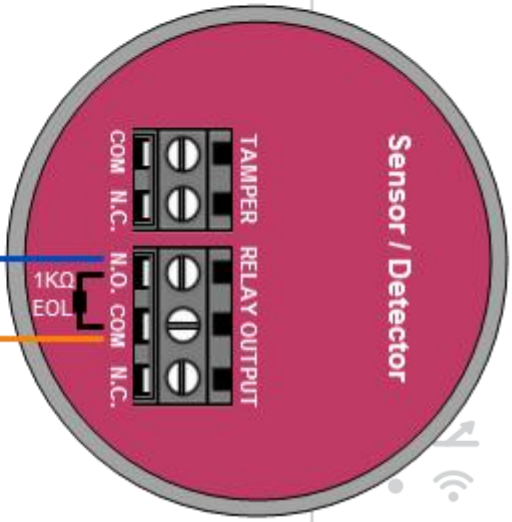


Wiring Example: A sensor/detector with relay base connected to zone input 1/3 of the Pégasus Nx terminal block in single-mode, normally close (N.C.) contacts with End of Line (EOL) resistor.

Single-Mode: Normally Open (N.O.) Contacts with End of Line (EOL) Resistor

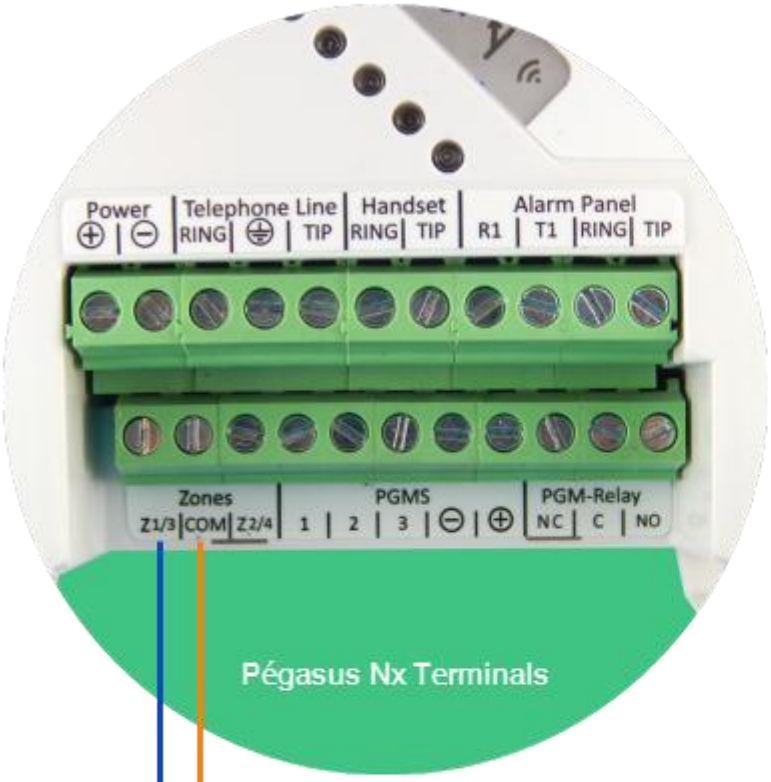


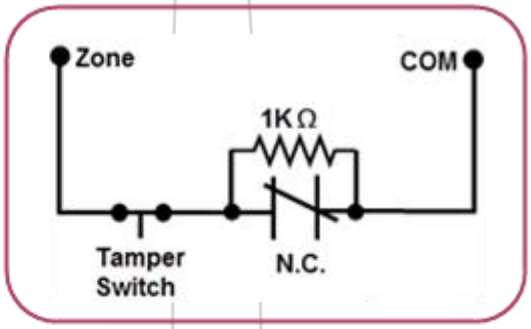


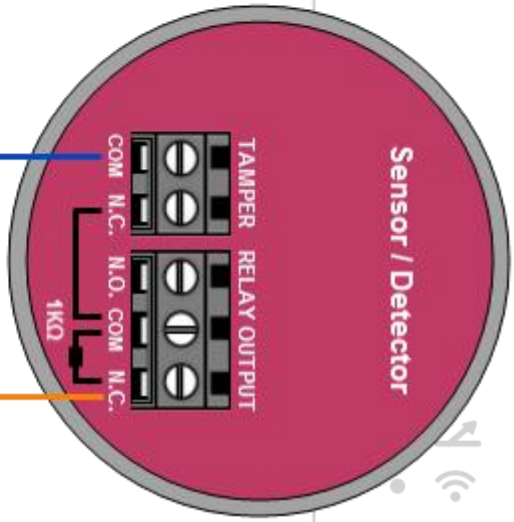


Wiring Example: A sensor/detector with relay base connected to zone input 1/3 of the Pégasus Nx terminal block in single-mode, normally open (N.O.) contacts with End of Line (EOL) resistor.

Single-Mode: Normally Close (N.C.) Contacts without End of Line EOL Resistor, with Tamper Recognition

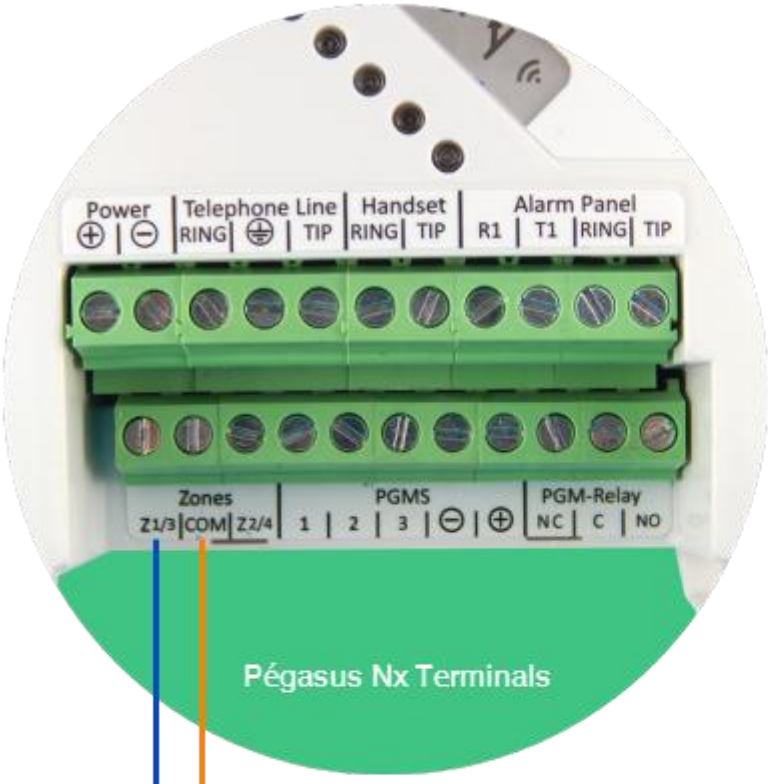


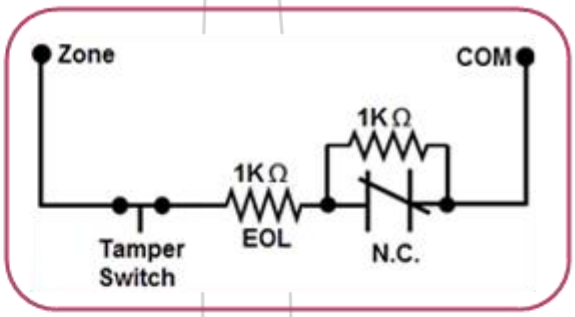


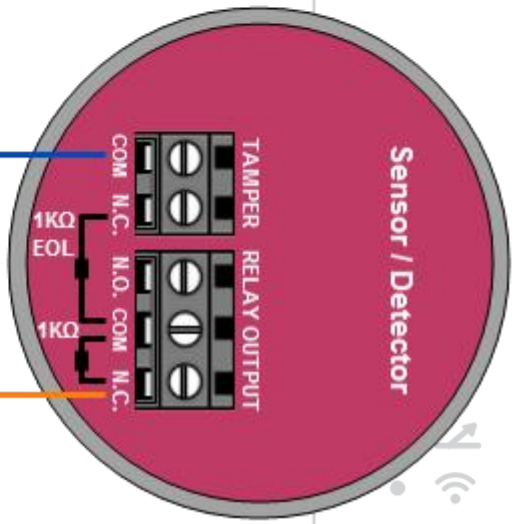


Wiring Example: A sensor/detector with relay base connected to zone input 1/3 of the Pégasus Nx terminal block in single-mode, normally close (N.C.) contacts without End of Line (EOL) resistor, with Tamper recognition.

Single-Mode: Normally Close (N.C.) Contact with End of Line (EOL) Resistor, with Tamper & Wire Fault Recognition

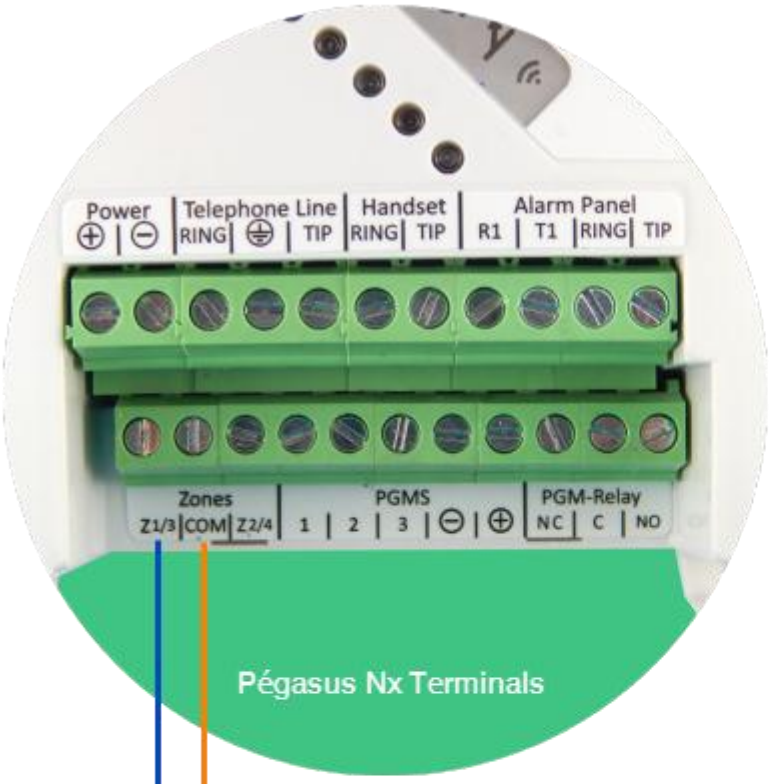


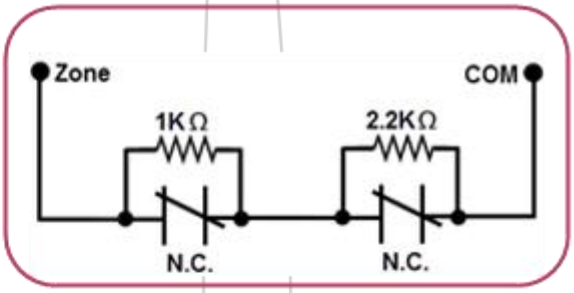


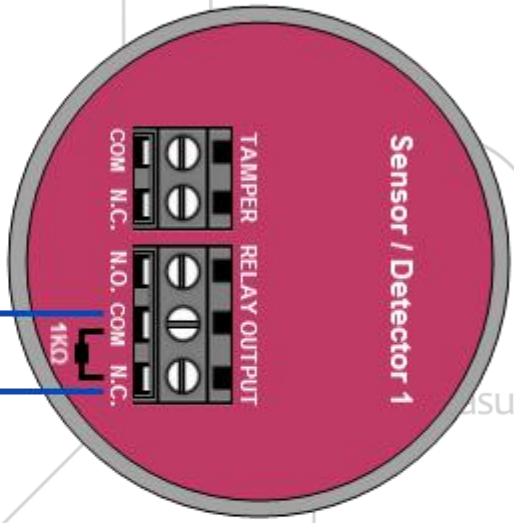


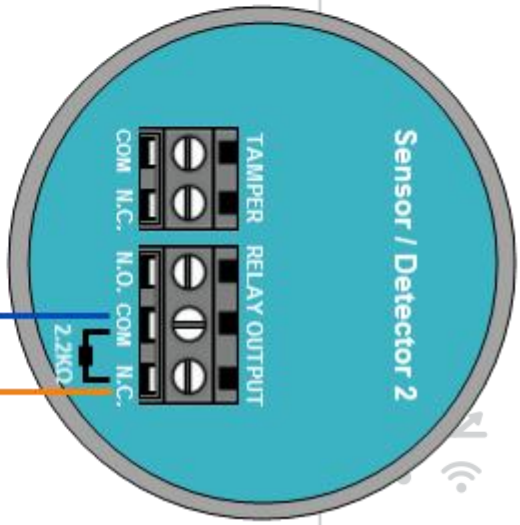
Wiring Example: A sensor/detector with relay base connected to zone input 1/3 of the Pégasus Nx terminal block in single-mode, normally close (N.C.) contacts with End of Line (EOL) resistor with Tamper & wire fault recognition.

Double-Mode: Normally Close (N.C.) Contacts without End of Line (EOL) Resistor



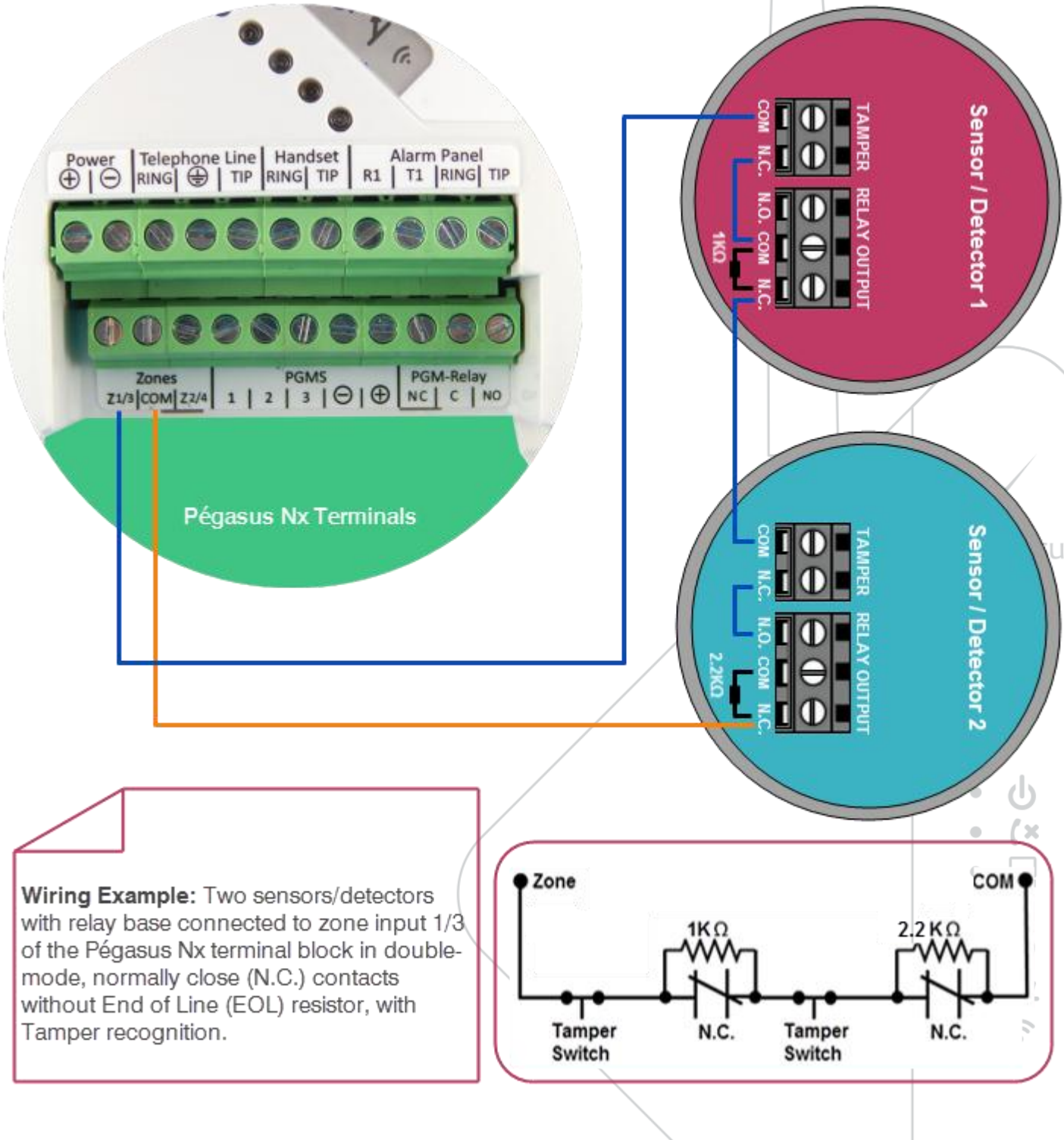






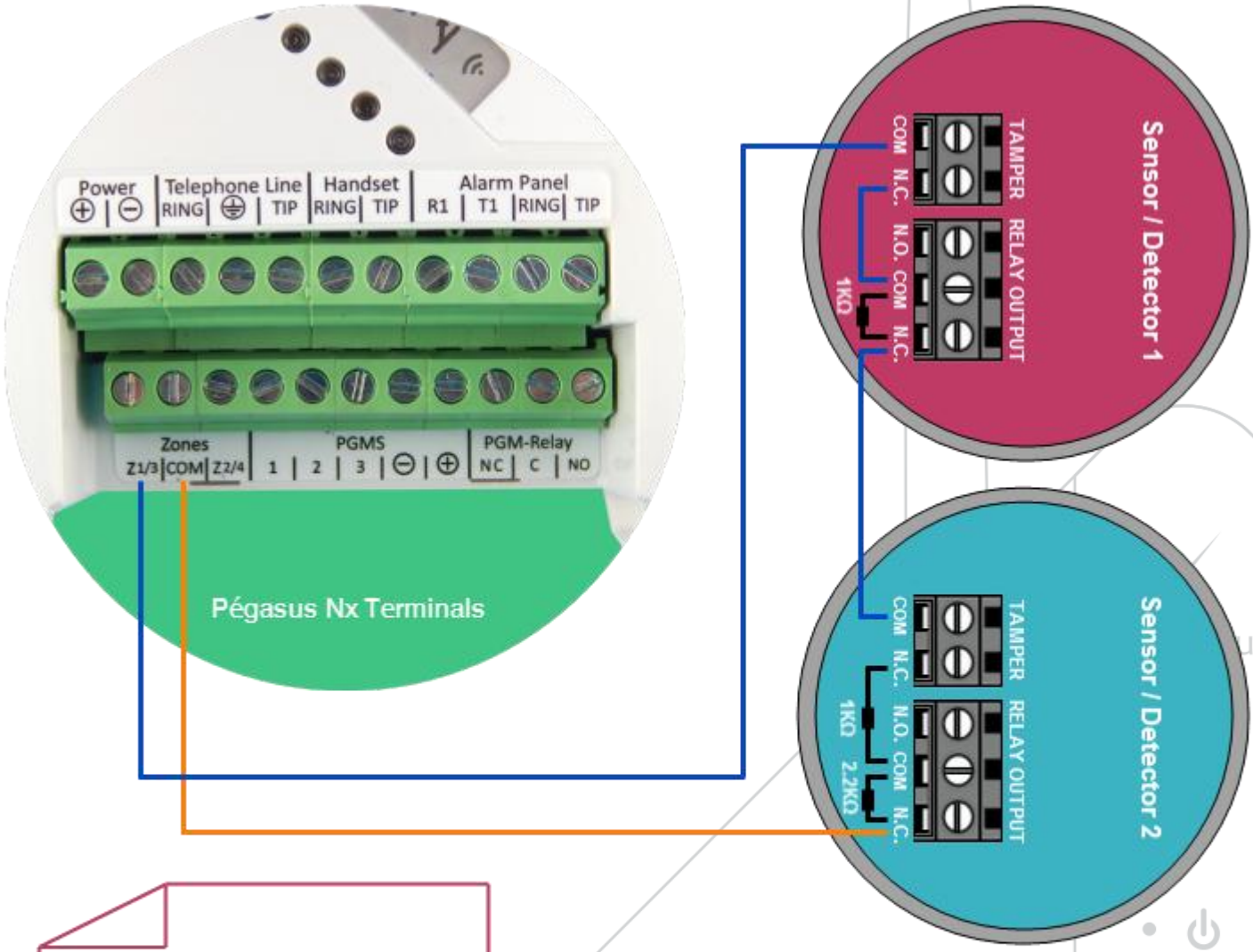
Wiring Example: Two sensors/detectors with relay base connected to zone input 1/3 of the Pégasus Nx terminal block in double-mode, normally close (N.C.) contacts without End of Line (EOL) resistor.

Double-Mode: Normally Close (N.C.) Contacts without End of Line (EOL) Resistor, with Tamper Recognition

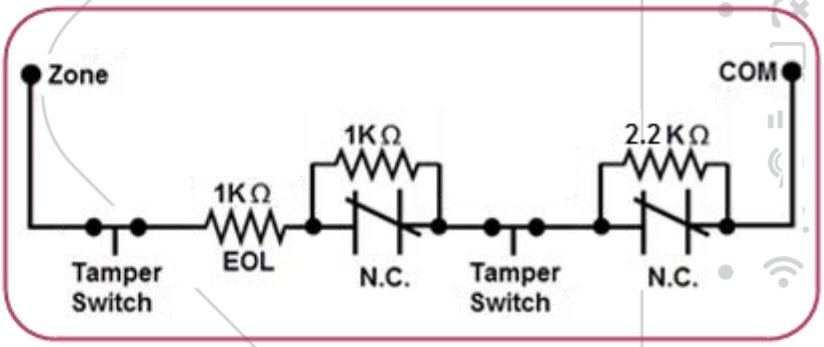


Wiring Example: Two sensors/detectors with relay base connected to zone input 1/3 of the Pégasus Nx terminal block in double-mode, normally close (N.C.) contacts without End of Line (EOL) resistor, with Tamper recognition.

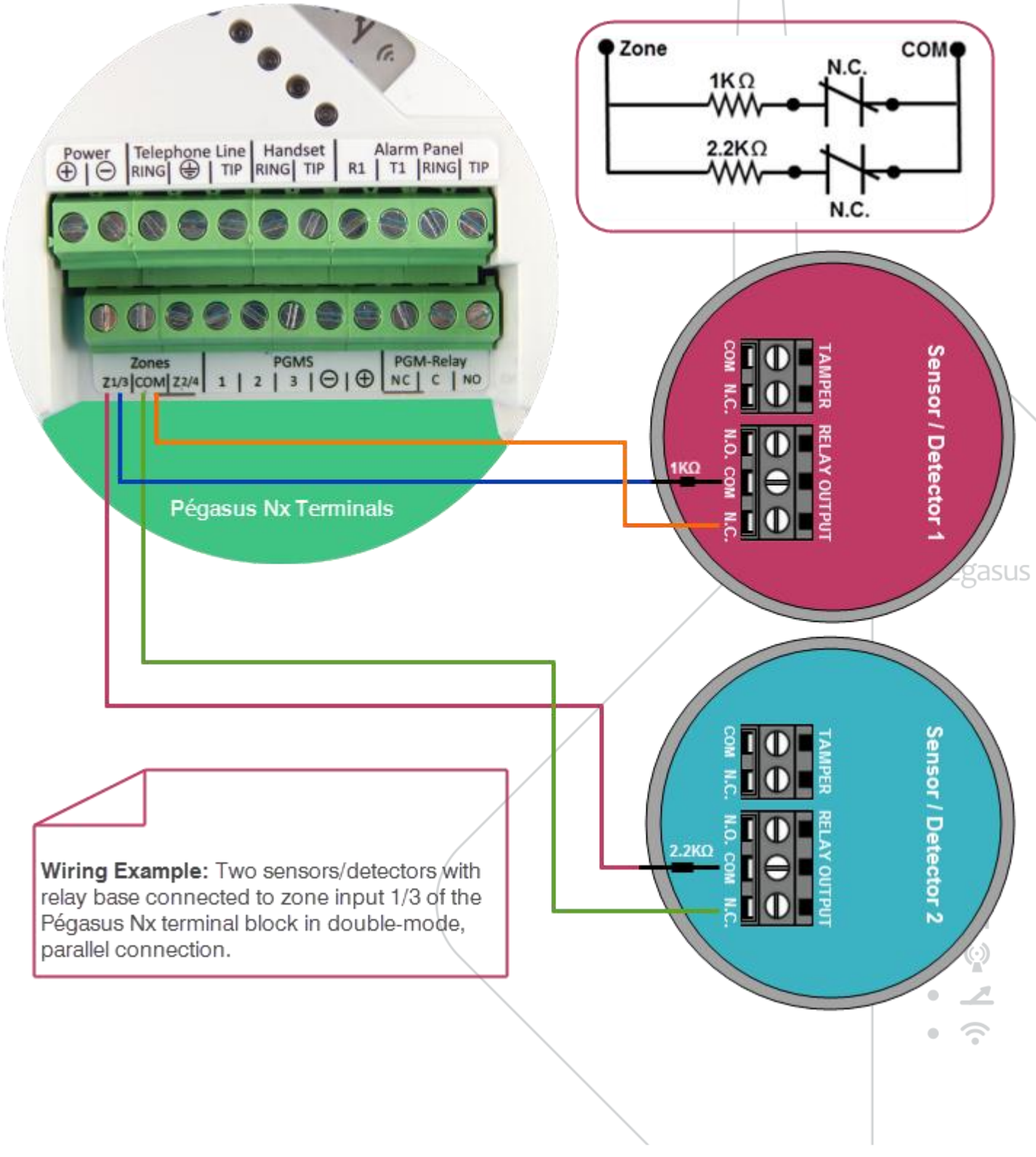
Double-Mode: Normally Close (N.C.) Contacts with End Of Line (EOL) Resistor, with Tamper & Wire Fault Recognition



Wiring Example: Two sensors/detectors with relay base connected to zone input 1/3 of the Pégasus Nx terminal block in double-mode, normally close (N.C.) contacts with End of Line (EOL) resistor, with Tamper and wire fault recognition.



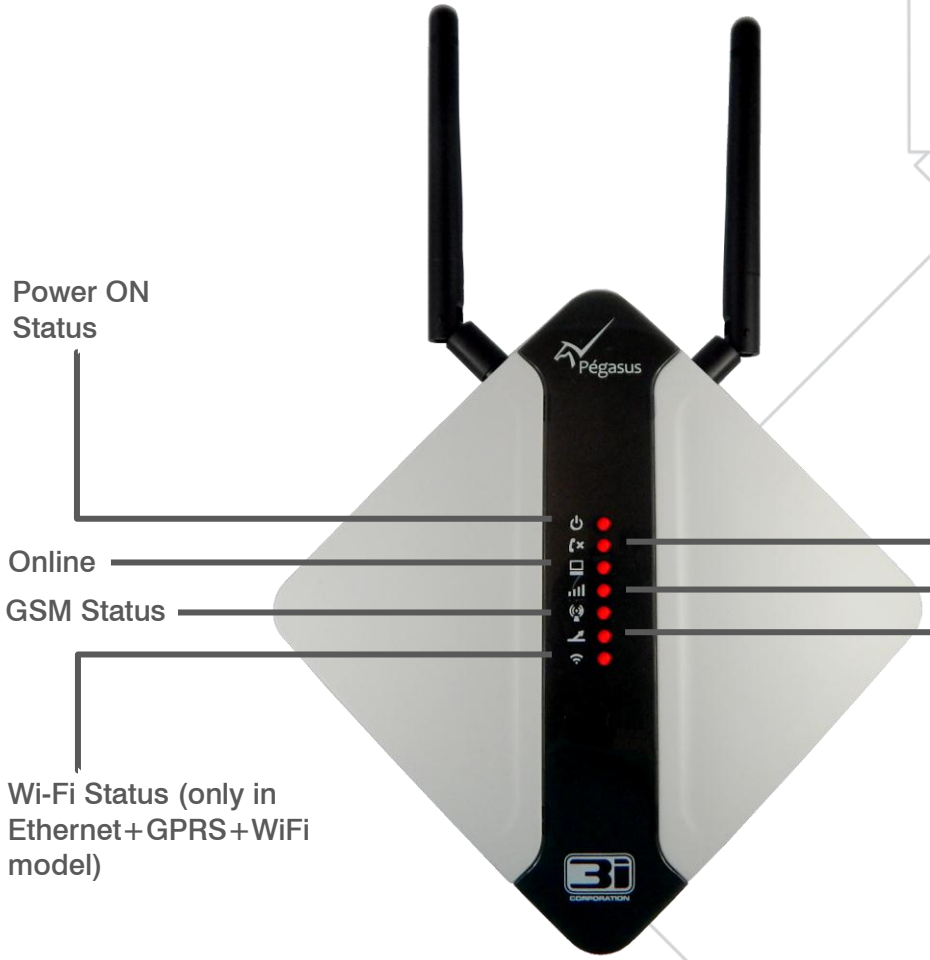
Double-Mode: Parallel Connection



Wiring Example: Two sensors/detectors with relay base connected to zone input 1/3 of the Pégasus Nx terminal block in double-mode, parallel connection.

8 How does LEDs Work?

Pégasus™ Nx is built-in seven on-board LEDs, which emits light through its front door under specific conditions. The blinking and behavior of LEDs is crucial and helps you to analyze the status of device.



LEDs Description

LEDs	Status	Function
Power ON Status This led indicates Power ON/OFF and device Sleep Mode status	**LED Blinking:** 5 sec ON & 0.2 sec OFF	Indicates that device is in the working state
	LED Blinking: 0.1 sec ON & 0.1 sec OFF	Indicates that device is in the Sleep mode. This state can occur during battery fault or low battery percentage.
	LED is OFF	Device is not working.
Telephone Line Cut Off This led indicates whether telephone line is connected or disconnected to the device	LED ON	Telephone line **NOT** connected to the device
	LED OFF	Telephone line connected to the device
Online This led indicates whether device is connected or to the Zeus™ Server or not	LED ON	Device CONNECTED to the Zeus™ Server
	LED OFF	Device **NOT** connected to the Zeus™ Server
GSM Signal Strength This LED represents GSM signal strength status and Module Jammer status	**LED Blinking:** 0.002 sec ON & 0.002 sec OFF	Indicates that device is in the jammed state

LEDs	Status	Function
	LED Blinking: 0.5 sec ON & 0.5 sec OFF	Indicates that GSM signal strength is less than12dB
	LED Blinking: 2 sec ON & 2 sec OFF	Indicates that GSM signal strength is greater than12dB & less than 20 dB
	LED Blinking: 0.5 sec ON & 5 sec OFF	Indicates that GSM signal strength is greater than 20dB
	LED OFF	GSM modem **NOT** enabled
GSM Status This LED indicates whether GSM module is ON or OFF	LED OFF	GSM module OFF
	LED Blinking: Fast blinking (1 sec)	Net search/not registered/turning off
	LED Blinking: Slow blinking (3 sec)	Registered full service
Alarm Panel This LED indicates whether Alarm Panel is connected to virtual line or not	LED OFF	Alarm panel **NOT** connected to the virtual line.
	LED ON	Alarm panel CONNECTED to the virtual line.
Wi-Fi Status (only in Ethernet+GPRS+WiFi Model) This LED indicates whether Wi-Fi is connected to Access Point or not	LED OFF	Wi-Fi **NOT** enabled Module NOT CONNECTED to internet via Wi-Fi
	LED ON	Wi-Fi enabled Module CONNECTED to internet via Wi-Fi